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a little to the north of satellite, the south pole of the shadow being in line with the equator of the satellite. The equatoreal belt is broader than before, and the north brown belt darker; the southern dark belt is broken by a white streak, stretching nearly across the planet, and is hazy, and not so red or brown as the north belt.—(T.)

August 9, 7.50 P.M.—*Jupiter* well defined. The long, oval, dark reddish patch south of the southern belt, noticed on the 4th, still visible, but I think slightly longer. The bright patch on bright belt not distinguishable.—(T.)

August 13, 10.0 P.M.—The oval red space on southern bright belt, noted on the 4th, still visible, but not the bright spot on the equatoreal cloud belt, but a bright spot very like it precedes it several Jovian hours, being near the western edge of the planet when the red space was rather more than half visible on the opposite or eastern side of the planet.—(T.)

October 1, 10.0 P.M.—The equatoreal cloud belt was dense, and the occultation was complete at limb. It may be here remarked, as a general note, that the satellites, as a rule, are not visible through the dense white cloud belts, but are seen at occultation through the broken cloud belts and brown belts.—(T.)

October 2, 10.0 P.M.—The southern dark belt this year has generally been covered with a thin film of white cloud, and has seldom the decided salmon tint noticed in previous years, occasionally assuming a greyish green. The equatoreal bright belt to-night resembled a bank of cumulus cloud with its base toward the north and its crest toward the south. The northern dark belt is narrow, and of a salmon tint, varied by dark streaks and patches.—(T.)

Phenomena of Jupiter's Satellites observed at Mr. E. Crossley's Observatory, Bermerside, Halifax. By Mr. J. Gledhill, F.R.A.S.

The instrument with which the following observations were made is an Equatoreal having an aperture of $9\frac{1}{3}$ inches. The power used was almost invariably 240: occasionally powers 330 and 470 were applied:—

Day of Obsn.	Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1879				h.	m.	s.	h.	m.	s.	
Aug. 30	I.	Oc. R.	first seen	10	6		10	8		very bad definition
			half out		7					
			just off		8	30				
31	III.	Tr. E.	first contact	11	11		11	19		very bad definition
			half off		15					
			just off		19					
Sept. 14	I.	Tr. I.	first contact	8	29		8	29		bad definition
			bisection		30	30				
			second contact		32					
14	I.	Sh. I.	bisected	8	52	30	8	51		bad definition
			fully on disk		55					
14	II.	Oc. D.	first contact	10	14		10	15		bad definition
			disappearance		18					

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Day of Obsn.		Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1879					h.	m.	s.	h.	m.	s.	
Sept.	29	I.	Oc. D.	first contact	9	13		9	15		very fair obsn.
				bisection		15					very fair obsn.
				disappearance		17					very good
	29	I.	Ec. R.	first seen	12	15	50	12	15	8	fair
Oct.	6	I.	Oc. D.	first contact	11	1		11	2		
				disappearance	11	3					
	9	II.	Oc. D.	disappeared	6	5		6	15		bad definition
	14	I.	Tr. I.	first contact	9	59		9	59		fair observation
				bisection	10	1					fair observation
				second contact	10	2					fair observation
	14	I.	Sh. I.	fully on disk	11	3		10	59		very bad defn.
	15	I.	Ec. R.	first seen	10	34	43	10	35	8	good obsn.
				fully out		36					uncertain
	20	III.	Tr. I.	first contact	7	32	48	7	32		much boiling
				bisection		36					
		III.	Tr. E.	inner contact	11	0		11	7		fair observation
				bisection		3					uncertain
				external contact		8					fair
	25	II.	Tr. I.	just on disk	6	24		6	3		very bad defn.
	25	II.	Sh. I.	first seen	8	23	30	8	22		
				half on		24					
				fully on		25					good obsn.
	25	II.	Tr. E.	inner contact	8	48	30	8	55		fair observation
				bisection		50	30				fair observation
				external contact		53					fair observation
	25	IV.	Ec. D.	began to fade	9	25		9	34	29	misty, but still
				gone		27					
	25	II.	Sh. E.	off disk	11	7		11	14		
Nov.	1	I.	Sh. E.	just off	6	7		6	6		very bad defn.
	1	II.	Tr. I.	just within	8	33		8	32		very bad defn.
	1	II.	Sh. I.	just within	11	3		11	1		very bad defn.
	1	II.	Tr. E.	just off	11	25		11	24		very bad defn.
	2	IV.	Tr. I.	certainly on disk	8	20		8	30		
	7	I.	Oc. D.	first contact				7	17		fair observation
				bisection		15	30				fair observation
				just gone		17					good obsn.
	12	II.	Sh. E.	first contact	5	35		5	48		very bad defn.

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Day of Obsn.	Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1879				h.	m.	s.	h.	m.	s.	
Nov. 14	III.	Oc. D.	first contact	8	32		8	38		bad definition
			bisection		35					
			just gone		39					
14	I.	Oc. D.	first contact	9	8		9	11		good obsn.
			bisection		10					not good
			just gone		11					good
15	I.	Tr. I.	first contact	6	19		6	19		good obsn.
			bisection		21					good?
			just within		22					good
15	I.	Sh. I.	just within	7	40		7	39		
15	I.	Tr. E.	inner contact	8	36		8	38		uncertain obsn.
			bisection		38					good
			outer contact		40					good
23	I.	Ec. R.	first seen	9	9	53	9	11	19	good obsn.
*			full orb		11	30				good obsn.
24	I.	Tr. E.	outer contact	5	0		5	1		cloudy
Dec. 3	II.	Tr. I.	first contact	8	10		8	8		pretty good definition
			bisection		12					
			just within		14					
6	III.	Ec. R.	first seen	5	28		5	30	42	bad definition
			full orb		31					
6	IV.	Sh. I.	just within	8	58		8	56		very bad sky
8	I.	Tr. I.	just within	6	38		6	35		good defn.
8	I.	Sh. I.	just within	7	56		7	55		
8	I.	Tr. E.	inner contact	8	51		8	54		pretty good sky
			external contact		56					
12	II.	Oc. D.	first contact	4	58	30	4	59		good sky
			half gone	5	0	30				
			just gone		2	30				
21	II.	Sh. I.	just within	5	29		5	25		very bad defn.
21	II.	Tr. E.	inner contact	5	45		5	46		
			bisection		47					
			outer contact		50					

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* See foot-note, p. 291.

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A few phenomena observed with the same instrument in the years 1875, 1876, and 1877 are subjoined.

Day of Obsn.	Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1875				h.	m.	s.	h.	m.	s.	
April 13	I.	Ec. D.	began to fade	9	17	53	9	19	11·6	good
*			half gone		18	18				not so good
			disappeared		19	18				good
	I.	Oc. R.	first seen	11	29	30	11	34		bad definition
			half out		31					bad definition
			just clear		33					bad definition
19	I.	Tr. I.	first contact	13	46	30	13	49		not good
			bisection		48					not good
			just within		49	30				pretty fair
19	I.	Sh. I.	fully on disk	13	54		13	52		uncertain
28	I.	Tr. I.	first contact	9	57	57	9	59		uncertain
			bisection		59	27				uncertain
			just within	10	1	27				uncertain
28	I.	Sh. I.	bisected	10	16		10	15		defn. very bad
28	I.	Tr. E.	first contact	12	6	27	12	11		definition bad
			bisection		8	27				
			just clear		11	27				the best obsn.
May 14	I.	Tr. E.	first contact	10	4	4	10	8		good
			bisection		5	4				fair
			just off		7	34				good
	I.	Sh. E.	first contact	10	42	34	10	46		fair
			bisection		44	34				fair
			last contact		46	34				fair
22	I.	Ec. R.	first seen	9	53	49	9	54	3·6	good
			half out		54	28				uncertain
			full orb		55	40				good
June 13	I.	Tr. I.	first contact	9	33	28	9	35		pretty good
			bisection		35	58				uncertain
			last contact		37	58				pretty good
13	I.	Sh. I.	bisection	10	40		10	42		bad sky
			just within		43					bad sky
14	I.	Ec. R.	first seen	10	5	39	10	5	48·5	good
14	II.	Ec. R.	first seen	10	49	14	10	52	0·6	good
			full orb		52					good

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Day of Obsn.		Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1876					h.	m.	s.	h.	m.	s.	
April	7	I.	Sh. I.	inner contact	12	57		12	56		bad definition
	7	I.	Tr. I.	inner contact	13	49		13	48		bad definition
	7	I.	Sh. E.	just off	15	9		15	8		bad definition
	7	I.	Tr. E.	just off	16	0		15	59		bad definition
	15	I.	Ec. D.	just gone	12	12		12	19	1·5	not good
	26	III.	Ec. D.	just gone	11	50		11	42	3.6	
	26	III.	Ec. R.	first seen	13	24		13	23	45·9	probably some seconds late
	26	III.	Oc. D.	just gone	13	50		13	48		
	30	I.	Sh. I.	inner contact	13	7		13	5		bad definition
	30	I.	Tr. I.	inner contact	13	31		13	30		bad definition
	30	I.	Sh. E.	just off	15	19		15	17		bad definition
May	2	I.	Sh. E.	just off	9	48		9	46		fair definition
	2	I.	Tr. E.	just off	10	9		10	7		
	7	I.	Sh. I.	just within	15	0		14	59		very bad sky
	7	I.	Tr. I.	just within	15	15		15	14		very bad sky
	8	I.	Ec. D.	first seen	12	23		12	21	55·9	very bad sky
	9	I.	Sh. I.	inner contact	9	29		9	27		very bad sky
	9	I.	Tr. I.	inner contact	9	41		9	39		very bad sky
	9	I.	Sh. E.	just off	11	42		11	40		very bad sky
	9	I.	Tr. E.	just off	11	53		11	51		very bad sky
June	1	I.	Sh. I.	inner contact	9	40		9	39		bad definition
	1	I.	Tr. E.	inner contact	11	26		11	29		bad definition
				outer contact		29					bad definition
	1	I.	Sh. E.	just off	11	51		11	51		bad definition
	16	I.	Oc. D.	first contact	10	4		10	7		uncertain
				gone		8	46				pretty good
July	2	I.	Ec. R.	first seen	11	15	13	11	15	17·7	good
				full orb			7				

Day of Obsn.		Satellite	Phenomenon		G.M.T. of Obsn.			Time from N.A.			Remarks
1877											
July	1	II.	Tr. I.	first contact	10	12		10	14		bad definition
	*			bisection		14					
				inner contact		16					
	26	II.	Tr. E.	just off	9	1		9	3		very bad sky

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* During the observations marked thus * Mr. Crossley was at the telescope and I watched the chronometer.

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Day of Obsn.	Satellite	Phenomenon	G.M.T. of Obsn.	Time from N.A.	Remarks
1878			h. m. s.	h. m. s.	
Sept. 10	III.	Oc. D. first contact	9 0	9 4	a little uncertain
*		half gone	4		very fair
		gone	8		good
	I.	Ec. R. first seen	10 39 1	10 38 33	good
		half out	39 49		uncertain
*		fully out	40 49		uncertain
Oct. 26	I.	Oc. D. first contact	7 29	7 31	bad sky

Observations of the exterior Satellite of Mars at the Oxford University Observatory. By Prof. C Pritchard.

The accompanying observations of the exterior satellite of Mars were made with the Grubb Equatoreal of 12¼ inches' aperture, the power employed 125. During the observations the planet was nearly hidden behind a bar which could be turned with the Position Circle. As no illumination of the field could be permitted, the position angles were determined by turning the bar till it was at right angles to the line joining the satellite and the centre of the planet, the judgment being assisted by the small segment of the planet left uncovered. It was thought that this angle could be judged with some degree of accuracy. The distances are estimations, assisted by a knowledge of the width of the bar and of the diameter of the planet.

Oxford Sidereal Time.	Position Angle	Distance.	Remarks.
h m	°	"	
Nov. 5 0 57·2	58	62	The satellite kept pretty steadily in view. The error of the position angle probably within 5°. Definition very favourable. Some moonlight.
1 0·4	55	60	
1 45·5	55	65	
Nov. 11 22 27	223	55	False scattered light beyond the limb of the planet very troublesome. The definition of the planet not so good as on the 5th inst., and the observation less satisfactory.
23 0	225	50	
23 15	225	48	
Nov. 15 3 29	60	60	It was thought at times that there was an object on the other side of the planet at about half of this distance.
4 58	57	62	

These observations were made by Mr. W. Plummer.

Oxford,
1880, *March* 11.